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October 16, 1958

Our Proposal No. 1078G

*STACKED YAGI ANTENNA* 25X1A)  
25X1

ATTENTION: [REDACTED]

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Gentlemen:

Based on discussions with you at our plant, your specifications entitled "Stacked Yagi Antenna Requirement" and subsequent conversations, we can supply you with two units of antenna system including tower, support structure, rotator equipment and indicators at a cost of \$8,500.00 per unit.

Our proposal is based on meeting all the requirements as stated in your specification.

The following points based on subsequent discussions would be included in the specifications:

1. Lowest antenna element to be 50 feet from the ground.
2. Azimuth rotation of 360° satisfactory.
3. Operation of rotator to be required at 115 volts AC, 12 volts DC.
4. Operation under ice conditions  $\frac{1}{4}$ "- $\frac{1}{2}$ " radial ice.
5. Commercial finish satisfactory - no paint - iriditing on aluminum surfaces.
6. Transmission line to rotator to be provided - RG-9/U or equivalent.
7. Remote control - only electrical control is required.
8. Commercial packing.
9. Trial erection at plant.
10. Fiberglas spars to be investigated, if necessary.

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25X1**CONFIDENTIAL****ENGINEERS • DESIGNERS • MANUFACTURERS OF HIGH FREQUENCY ANTENNAS**

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Our approach to this project will be to utilize a support frame as shown in attached Sheet 1. This support frame will be made of more than one piece so it can be satisfactorily packaged for shipment. It will include clamping mechanisms for either vertical or horizontal polarization case. To change polarization, it will be necessary to reorient only the entire support frame and it will not be necessary to disconnect and change each individual antenna. This should save time in re-orienting the antenna to the opposite polarization.

Our preliminary calculations indicate that the loading is quite heavy considering the icing and windload. Therefore, it becomes necessary to use a much heavier positioner than a standard rotator such as the type as are commercially available. In order to provide for 12 volt DC and 115 volt AC operation, a considerably different type rotator is required. We have investigated two types of rotators; mainly, a regular base type positioner with gear drive and also another type of positioner which would be a chain drive. Our present approach is to consider the chain drive type as being more appropriate to the application. It appears that it will be easier to accomplish the 12 volt and 115 volt operation using the chain drive approach. Also, tolerances will not have to be held as closely using the chain drive.

Our plans, at the present, are to utilize an Alpar tower, type El2, as shown in Sheet 3.

The proposed method of attachment of the rotator assembly to the top tower section is shown in Sheet 4. This approach will allow the overturning moment to be transmitted to the tower at the upper thrust bearing. A use of a lower thrust bearing will provide for alignment of the mast. Although it is not shown in the sketch, we plan to provide a protective cover for the rotator assembly.

Because the rotator design will be a special design, it will take a little bit longer to deliver than previously anticipated. Delivery of a suitable rotator is approximately 90 days. Therefore, we think a realistic date on these two systems would be 120 days after receipt of an order.

Price quoted is f.o.b. Sherburne, New York.

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[Redacted]

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Thank you for the opportunity of submitting a proposal on this problem and if we can answer any questions on this proposal, please contact me.

Very truly yours,

[Redacted Signature]

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Asst. Vice President  
Commercial & Government Sales

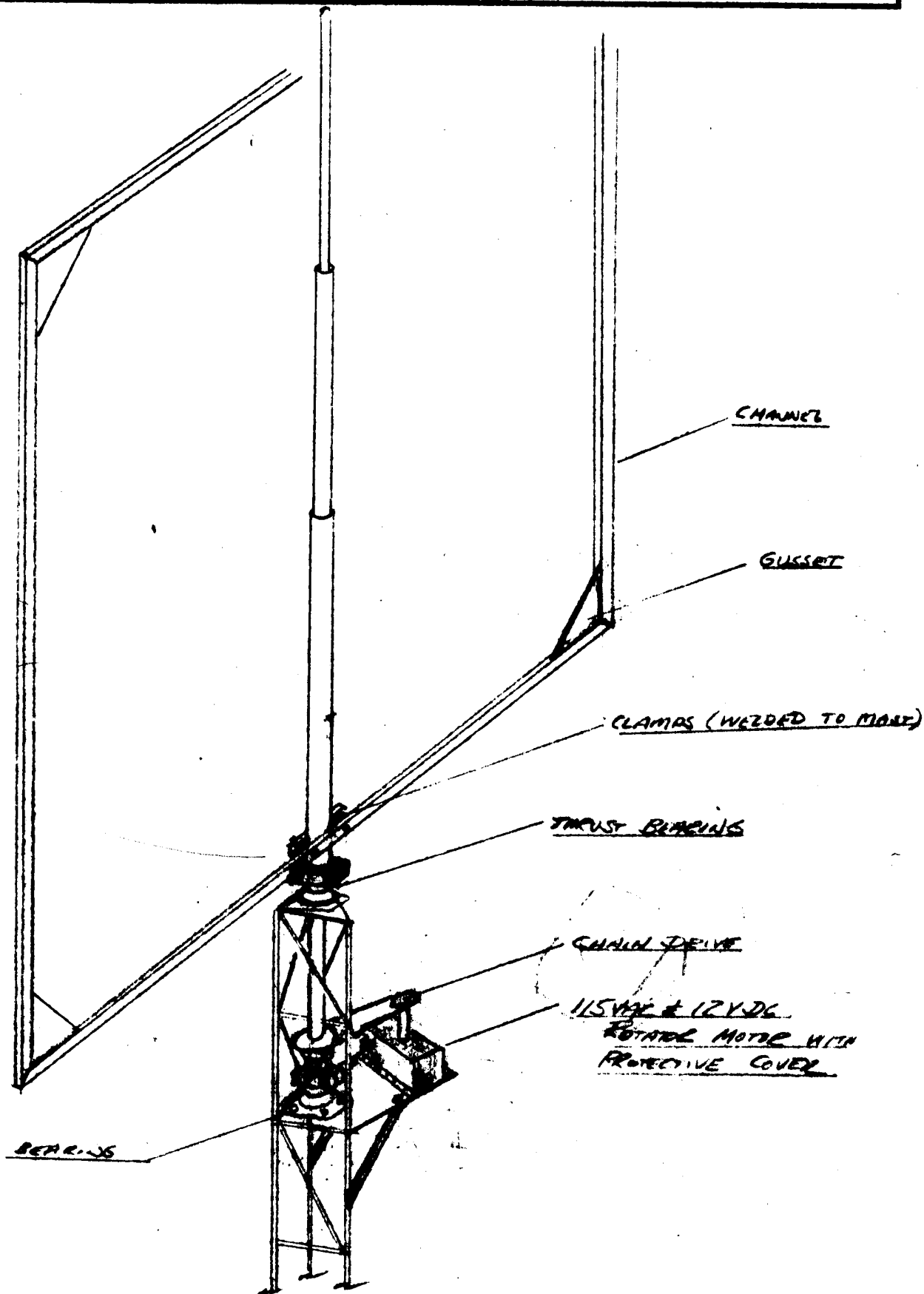
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Enc.

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DATE: 10 OCT 59		JOB	25X1
ENG: AF	TITLE: ANTENNA DOME & SUPPORT FRAME	SHEET (4)	



DATE: 10 OCT 58		JOB SHEET (5)	25X1
ENG: AF	TITLE: EQUIPMENT LIST		

TOWER ALPAR E1512

ANCHOR RODS

TURNBUCKLES

GUY WIRE

THIMBLES

GUY WIRE CLIPS

ROTATOR MOUNTING BASE

ROTATOR

ROTATOR HOUSING

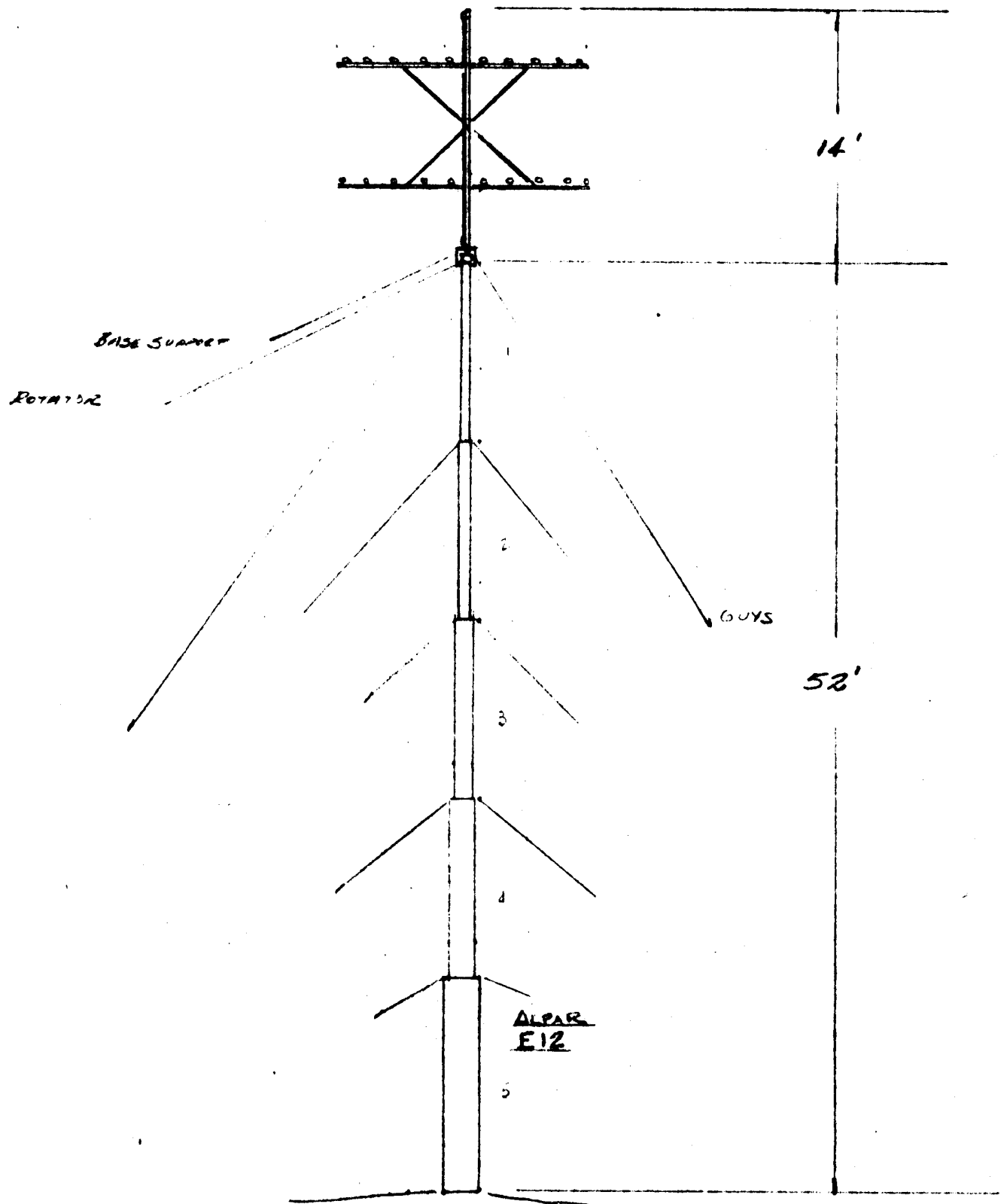
ANTENNA MAST & SUPPORT ASSEMBLY

YAGI ANTENNAS

STACKING LINES

FEED CABLES

DATE: 10 OCT 58		JOB	
ENG: AF	TITLE: STACKED YAGI ANTENNA	SHEET (3)	



DATE: 10 Oct '59		JOB	25X1
ENG: AS	TITLE: STAKED VARI ANTENNA	REVISION	

**CONFIDENTIAL**BENDING MOMENT (BASE OF MAST)

$$F = Wd = 1200 (5\frac{1}{2}) = \underline{6600 \text{ lb ft.}}$$

$$S = \frac{Mc}{I} = \frac{M}{Z} \quad Z = \text{section modulus.}$$

Use 1/2 in WALL 3 INCH DIAM. ALUMINUM TUBING  $Z \approx 1.7 \text{ in}^3$ 

$$S = \frac{6600 \text{ lb ft} (12) \text{ in}}{1.7 \text{ in}^3} = 46,600 \text{ psi}$$

SEVERAL STEELS MUST BE SELECTED HAVING YIELD STRENGTHS  
IN EXCESS OF 120,000 PSI

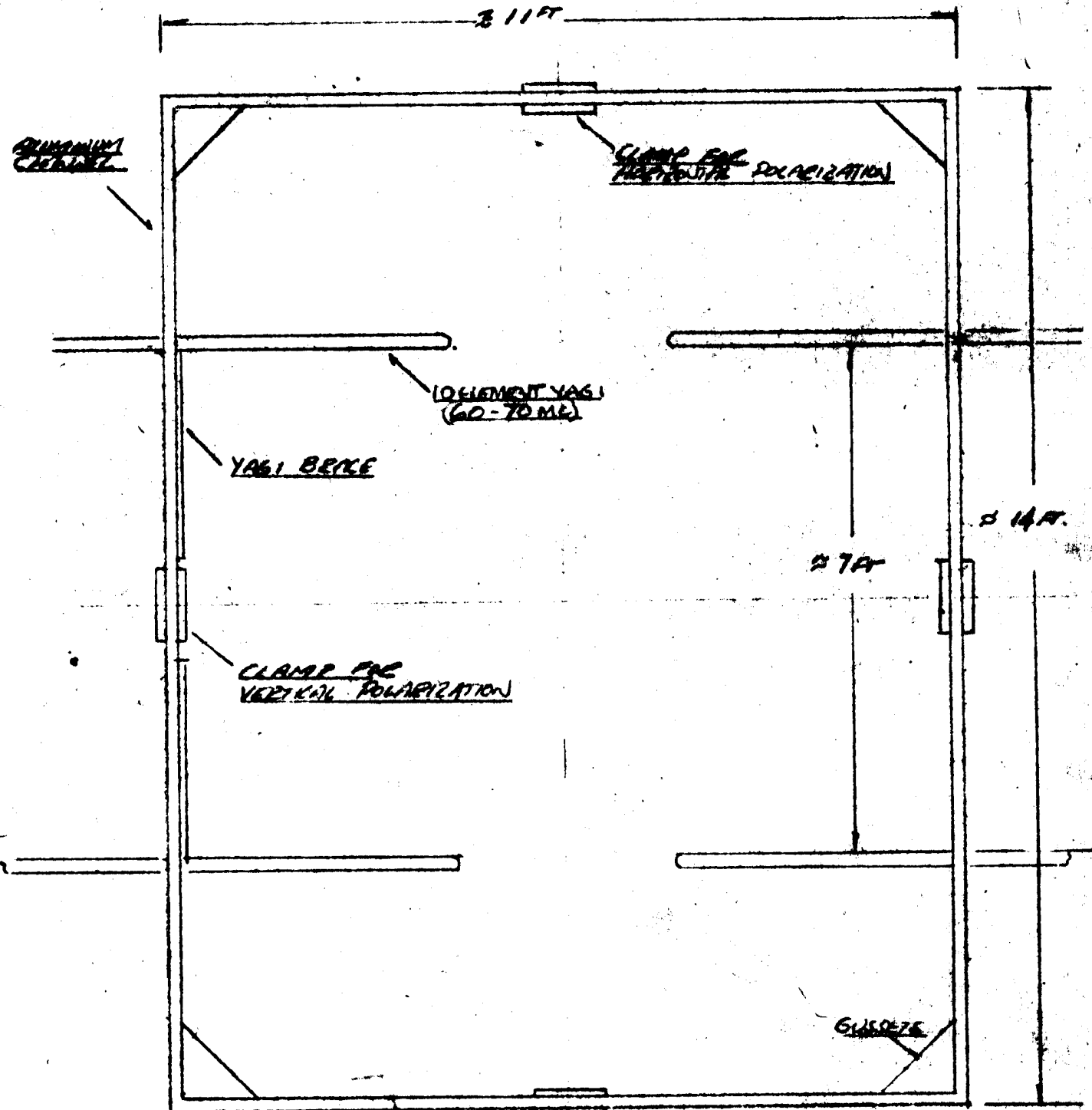
ESTIMATES

WEIGHT OF ASSY 250<sup>lb</sup>

WIND TORQUE APPROXIMATED ZERO  
MOMENT ON MAST 6600 lb ft.

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DATE: 10 OCT 58	JOB SHEET ①
ENG: AF	TITLE: STACKED YAGI ANTENNA

**CONFIDENTIAL**EST. WEIGHT

YAGI 4 x 27 = 108#  
 MTG HWARE = 75#  
 MAST 30#

213#

USE 250#

WIND LOAD (85 MPH)

YAGI 4 x 188 = 752 LB  
 H'WARE 8 x 30 = 240 LB  
 992 LB

USE 1200 LB

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